

CLAIMS

1. A waste gas treatment system having a burner part and a combustion chamber provided at a downstream side of said burner part, wherein combustion flames are formed from said burner part toward said combustion chamber, and a waste gas is introduced into said combustion flames, thereby oxidatively decomposing said waste gas,

wherein said combustion chamber is formed from an inner wall made of a fiber-reinforced ceramic material.

2. A waste gas treatment system according to claim 1, wherein a thermal insulator made of a porous ceramic material is placed between said inner wall and an outer wall.

3. A waste gas treatment system according to claim 2, wherein purge gas supply means is provided to maintain a space between said inner wall and said outer vessel under a purge gas atmosphere of higher pressure than a pressure in said combustion chamber.

4. A waste gas treatment system having a burner part and a combustion chamber provided at a downstream side of said burner part, wherein combustion flames are formed from said burner part toward said combustion chamber, and a waste gas is introduced into said combustion flames, thereby oxidatively decomposing said waste gas,

wherein said burner part has a cylindrical member which is closed at a top thereof and has an opening at a bottom thereof, said cylindrical member having a waste gas inlet in the top thereof and an air nozzle at a

predetermined position on a side wall thereof, said cylindrical member further having an auxiliary burning gas nozzle in the side wall in the vicinity of said opening, wherein the waste gas introduced from said waste gas inlet and air blown off from said air nozzle are mixed together, and an auxiliary burning gas blown off from said auxiliary burning gas nozzle is ignited to form combustion flames downward below said opening, and

wherein cooling means is provided to cool an auxiliary burning gas inlet part for introducing a fuel gas into said auxiliary burning gas nozzle.

5. A waste gas treatment system according to claim 4, wherein said auxiliary burning gas inlet part is an auxiliary burning gas chamber provided at an outer periphery of said cylindrical member, said auxiliary burning gas nozzle being provided in an inner side portion of said auxiliary burning gas chamber so as to blow off the auxiliary burning gas toward a central portion of said combustion chamber, and said cooling means is arranged to cool said auxiliary burning gas chamber by supplying a cooling medium to a cooling jacket provided at a boundary between said auxiliary burning gas chamber and said combustion chamber.

6. A waste gas treatment system according to claim 4, wherein said auxiliary burning gas inlet part is a auxiliary burning gas chamber provided at an outer periphery of said cylindrical member, said auxiliary burning gas nozzle being provided at a bottom of said

auxiliary burning gas chamber so as to blow off the auxiliary burning gas toward a central portion of said combustion chamber, and said cooling means is arranged to cool said auxiliary burning gas chamber by supplying a cooling medium to a cooling jacket provided adjacently to said auxiliary burning gas chamber or provided on an outer periphery of said auxiliary burning gas chamber.

7. A waste gas treatment system according to claim 4, wherein said auxiliary burning gas inlet part is an auxiliary burning gas inlet pipe having said auxiliary burning gas nozzle provided at a distal end thereof, said auxiliary burning gas inlet pipe being disposed to extend through a cooling jacket provided at an outer peripheral portion at a lower end of said cylindrical member so that the auxiliary burning gas blows off from said auxiliary burning gas nozzle toward a central portion of said combustion chamber, and said cooling means is arranged to cool said auxiliary burning gas inlet pipe by supplying a cooling medium into said cooling jacket.

8. A waste gas treatment system according to claim 4, wherein said auxiliary burning gas inlet part is an auxiliary burning gas inlet pipe having said auxiliary burning gas nozzle provided at a distal end thereof, said auxiliary burning gas inlet pipe being installed at an outer peripheral portion at a lower end of said cylindrical member so that the auxiliary burning gas blows off from said auxiliary burning gas nozzle toward a central portion of said combustion chamber, and said cooling means is

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disposed to extend through a cooling jacket provided at an outer periphery of said auxiliary burning gas inlet pipe so as to cool said auxiliary burning gas inlet pipe by supplying a cooling medium into said cooling jacket.

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9. A waste gas treatment system according to any one of claims 4 to 8, wherein said cooling medium is one of water, air, other liquids and gases.

10. A waste gas treatment system having a burner part and a combustion chamber provided at a downstream side of said burner part, wherein combustion flames are formed from said burner part toward said combustion chamber, and a waste gas is introduced into said combustion flames, thereby oxidatively decomposing said waste gas,

wherein dust removing means is provided to remove dust from an inner wall of said burner part and/or an inner wall of said combustion chamber or to prevent adhesion of dust thereto.

11. A waste gas treatment system according to claim 10, wherein said dust removing means comprises a dust scraping plate secured to a distal end of a shaft vertically moving in said burner part and/or combustion chamber.

12. A waste gas treatment system according to claim 10, wherein said dust removing means forms a layer of air stream along an inner wall surface of said burner part and/or an inner wall surface of said combustion chamber so that said layer of air stream prevents dust from adhering to the inner wall surface of said burner part and/or the inner wall surface of said combustion chamber.

13. A method of operating the waste gas treatment system according to claim 12, wherein said dust removing means has an air injection nozzle for forming a layer of air stream along the inner wall surface of said burner part and/or the inner wall surface of said combustion chamber, said layer of air stream being formed by continuously or intermittently injecting air from said air injection nozzle.

14. A dust remover for removing dust from an inner wall of piping through which a gas containing a large amount of dust flows, said dust remover comprising:

a scraping mechanism installed in said piping, said scraping mechanism having a rod-shaped scraping member secured to a main shaft to extend in a longitudinal direction of said piping;

a support mechanism for supporting the main shaft of said scraping mechanism so that the scraping member moves in an inner peripheral direction in contact with an inner surface of the piping or with a slight gap therebetween; and

a driving mechanism for continuously or periodically oscillating or rotating said scraping mechanism about the main shaft.

15. A dust remover according to claim 14, wherein said scraping member and main shaft are formed from hollow pipes, respectively, and respective hollow portions of said scraping member and main shaft communicate with each other, and wherein an opening is provided at a distal end of said scraping member so as to communicate with the hollow

portion, and a cleaning gas is supplied from an outside of said piping through the hollow portions of said main shaft and scraping member and blown off from said opening.

Sub 16. A dust remover according to claim 14 or 15, wherein said scraping member and main shaft are formed from hollow pipes, respectively, and respective hollow portions of said scraping member and main shaft communicate with each other, and wherein a multiplicity of holes or slits are provided in surfaces of both said scraping member and main shaft or in the surface of said scraping member so as to communicate with the hollow portions, and a cleaning gas is supplied from an outside of said piping through the hollow portions of said main shaft and scraping member and blown off from said multiplicity of holes or slits.

17. A method of operating the dust remover according to claim 15 or 16, wherein said cleaning gas is a neutralizing gas for neutralizing the gas flowing through said piping.

18. A method of operating the dust remover according to claim 15, 16 or 17, wherein said cleaning gas is blown off continuously or intermittently.

19. A waste gas treatment system having a burner part and a combustion chamber provided at a downstream side of said burner part, wherein combustion flames are formed from said burner part toward said combustion chamber, and a waste gas is introduced into said combustion flames, thereby oxidatively decomposing said waste gas,

wherein said burner part has a cylindrical member which is closed at a top thereof and has an opening at a

bottom thereof, said cylindrical member having a waste gas inlet in the top thereof and an air nozzle at a predetermined position on a side wall thereof, said cylindrical member further having an auxiliary burning gas nozzle in the side wall in vicinity of said opening,

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said air nozzle being arranged to blow a swirling air flow downward against combustion flames formed downward below said opening as a result of igniting an auxiliary burning gas injected from said auxiliary burning gas nozzle.

20. A waste gas treatment system according to claim 19, wherein said air nozzle is provided in such a manner that a center line of said air nozzle is close to a tangent to an inner wall surface that is parallel to said center line so that air will not stagnate at the inner wall surface.

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21. A waste gas treatment system according to claim 19 or 20, wherein said air nozzle and auxiliary burning gas nozzle are provided close to each other so that dust present between said air nozzle and auxiliary burning gas nozzle can be blown away with air blown off from said air nozzle.

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22. A waste gas treatment system having a burner part and a combustion chamber provided at a downstream side of said burner part, wherein combustion flames are formed from said burner part toward said combustion chamber, and a waste gas is introduced into said combustion flames, thereby oxidatively decomposing said waste gas,

wherein said burner part has a cylindrical member which is closed at a top thereof and has an opening at a

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(bottom thereof, said cylindrical member having a waste gas inlet in the top thereof and an air nozzle at a predetermined position on a side wall thereof, said cylindrical member further having an auxiliary burning gas nozzle in the side wall in vicinity of said opening,

wherein an inner diameter of said waste gas inlet and/or an inner diameter of said cylindrical member gradually increases toward said combustion chamber.

23. A waste gas treatment system comprising:

a burner part;

a combustion chamber provided at a downstream side of said burner part; and

a combustion gas cooling section provided at a downstream side of said combustion chamber;

said burner part, combustion chamber and combustion gas cooling section being provided integrally,

said burner part being provided with a waste gas inlet for introducing a waste gas, an air nozzle for injecting air to generate a swirling air flow, and an auxiliary burning gas nozzle for injecting an auxiliary burning gas; and

said combustion gas cooling section being provided with a liquid spray nozzle for spraying a liquid for cooling the waste gas flowing in from the combustion chamber and for capturing dust contained in said waste gas, an exhaust pipe for discharging said waste gas, and a drain pipe for draining the liquid sprayed from said liquid spray nozzle.